CLAIM AMENDMENTS

1. (original) A system unit for desorption of carbon dioxide and other impurities from high pressure methanol comprising one or a plurality of sequentially arranged expansion vessels, at least one heat exchanger, and at least one liquid/gas separator, characterized in that

(a) a line (1) is provided through which the intensely cooled methanol leaving the expansion vessel C is fed from below into a heat exchanger E; and

(b) a line (2) is provided through which the heated methanol is fed from above the heat exchanger E and is connected to a liquid/gas separator, in which the remaining carbon dioxide still contained in the methanol is desorbed to the greatest extent possible;

(c) wherein the liquid level in the expansion vessel C is located about 1 to 20 m above the liquid level in the liquid/gas separator D; and

(d) wherein the liquid level in the liquid/gas separator D is located about 0.5 m above the exit opening provided for heated methanol in the top of the heat exchanger E.

2. (original) The system unit according to claims 1, characterized in that it is downstream to an absorber (5), which is provided for purification of synthesis gas with methanol.

3. (currently amended) The system unit according to ~~claims 1 and 2~~ claim 1, characterized in that a regenerator (6) is downstream to it, in which by further increasing the temperature and influx of heated inert gas the remaining carbon dioxide is desorbed from the methanol.

4. (currently amended) The system unit according to ~~claims 1 through 3~~ claim 1, characterized in that the first expansion vessel A for the gas mixture obtained by desorption comprising hydrogen and carbon monoxide, has a line going to the heat exchanger E and a line to the expansion vessel B for the methanol containing liquid.

5. (currently amended) The system unit according to ~~claims 1 through 4~~ claim 1, characterized in that the second expansion vessel B for the carbon dioxide gas obtained by desorption has a line going to the heat exchanger E and a line to the expansion vessel C for the methanol containing liquid.

6. (currently amended) The system unit according to ~~claims 1 through 5~~ claim 1, characterized in that the expansion vessel C for the gaseous carbon dioxide obtained by desorption has a line (1) going to the heat exchanger E and a line for the methanol containing liquid to the upstream absorber which for its part

is connected by line (2) the methanol heated up there to the liquid/gas separator D.

7. (currently amended) The system unit according to ~~claims 1 through 6~~ claim 1, characterized in that the liquid/gas separator D has a branch line (3) for the gaseous carbon dioxide and another line (4) provided for feeding the separated methanol to the downstream regenerator.

8. (currently amended) The process for desorption of carbon dioxide and other gaseous impurities from methanol in the system unit in accordance with ~~claims 1 through 7~~ claim 1, wherein the desorption is carried out stepwise in a multiplicity of sequentially arranged expansion vessels, at least one heat exchanger and at least one liquid/gas separator, characterized in that the methanol leaving the expansion vessel C at a temperature of -60 ±10 °C and a pressure of 1 to 2 bar is fed into the heat exchanger E, heated there to a temperature of -10 ± 5 °C and fed into the liquid/gas separator D.

9. (original) The process according to claim 8, characterized in that the further material flow between the expansion vessels A, B and C as well as to the heat exchanger E and to the liquid/gas separator D may be accomplished with the aid of pumps or preferably by utilization of the thermo-siphon effect.

10. (currently amended) The process according to claim 8 [[and 9]], characterized in that in the expansion vessel A the pressure decreases from about 55 bar to about 9 bar and mainly hydrogen and carbon monoxide are desorbed at a temperature of about -45°C, wherein the gas fraction obtained after passing through the heat exchanger E is recovered to the process, while the liquid fraction is fed to a second expansion vessel B.

11. (currently amended) The process according to ~~claims 8 through 10~~ claim 8, characterized in that in the second expansion vessel B the pressure decreases from about 9 bar to about 2.7 bar and gaseous carbon dioxide is obtained at a temperature of about -45°C, to about -52°C, which is fed through the heat exchanger E and subsequently obtained for the process, while the liquid fraction obtained is fed to the third expansion vessel C.

12. (currently amended) The process according to ~~claims 8 through 11~~ claim 8, characterized in that, in the third expansion vessel C, the pressure of about 2.7 bar decreases to about 1.2 bar and gaseous carbon dioxide is obtained at a temperature of about -52°C, to about -60°C, which is fed through the heat exchanger E and subsequently can be obtained for the process.

13. (currently amended) The process according to ~~claims 8 through 12~~ claim 8, characterized in that [[,]] the liquid fraction contained in the third expansion vessel C is divided into two streams wherein one stream is fed to the upstream absorber (5) and the second stream after passing through the heat exchanger E via line (2) is fed to the liquid/gas absorber D.

14. (currently amended) The process according to ~~claims 8 through 13~~ claim 8, characterized in that the liquid fraction (4) recovered in the liquid/gas separator D is fed to a downstream regenerator (6) for removal of the last traces of carbon dioxide and the gas fraction (3) preferably purified with further carbon dioxide rich gas fractions is obtained to the process.